CLAIMS: I claim:

1. A method of controlling a multi-wheel drive vehicle comprising the steps of:

(a) determining a turning reference and a vehicle velocity;

(b) determining a reference distance from the turning reference;

(c) determining a wheel drive distance from the turning reference for each wheel drive of the multi-wheel drive vehicle;

(d) determining a velocity for each wheel drive based on the vehicle velocity, wheel drive distance, and reference distance; and

(e) outputting the determined velocity for each wheel drive to each wheel drive.

2. The method of claim 1 wherein step (a) comprises reading the position output of a user manipulable control device.

3. The method of claim 1 wherein step (a) comprises reading the angular position of a steering servo-mechanism.

4. The method of claim 2 wherein step of reading the position output of a user manipulable control device comprises the step of relating Cartesian output data to the tangent of an angle formed by the Cartesian output data.

5. The method of claim 1 wherein step (a) comprises determining the turning reference based on the following relationship:

$$a = H_R \times \tan \beta$$

where a is the turning reference, H_R is the distance from an origin of the vehicle's coordinate system to a vehicle velocity reference point, and β is an angle associated with the vehicle's steering servo-mechanism.

6. The method of claim 1 wherein step (b) comprises determining the reference distance based on the following relationship:

$$S_R = \sqrt{a^2 + H^2}$$

where S_R is the reference distance, a is the turning reference, and H is a wheel base dimension of the vehicle.

7. The method of claim 1 wherein step (d) comprises determining the velocity for each wheel drive based on the following relationship:

$$V = \frac{S}{S_R} \times V_R$$

where V is the velocity for the wheel drive, S is the wheel drive distance from the turning reference, S_R is the reference distance, and V_R is the vehicle velocity.

8. The method of claim 1 further comprising the step of determining a steering angle for at least one wheel drive.

9. The method of claim 9 further comprising the step of outputting the determined steering angle to the at least one drive.

10. A system for controlling a multi-wheel drive vehicle comprising the steps of:

(a) an input device;

(b) a controller in circuit communication with the input device;

(c) at least two wheel drives in circuit communication with the controller; and

(d) logic for:

(1) determining a turning reference and a vehicle velocity from the input device;

(2) determining a reference distance from the turning reference;

(3) determining a wheel drive distance from the turning reference for each wheel drive of the multi-wheel drive vehicle;

(4) determining a velocity for each wheel drive based on the vehicle velocity, wheel drive distance, and reference distance; and

(5) outputting the determined velocity for each wheel drive to each wheel drive.

11. The system of claim 10 wherein the input device comprises a user manipulable input device.

12. The method of claim 10 wherein the input device comprises a steering servo-mechanism.

13. The system of claim 11 wherein the user manipulable input device comprises a joystick input device.

14. The system of claim 10 wherein the logic determining a turning reference and a vehicle velocity from the input device comprises logic for determining the turning reference based on the following relationship:

$$a = H_R \times \tan\beta$$

where a is the turning reference, H_R is the distance from an origin of the vehicle's coordinate system to a vehicle velocity reference point, and β is an angle associated with the vehicle's steering servo-mechanism.

15. The system of claim 10 wherein the logic for determining a reference distance from the turning reference comprises logic for determining the reference distance based on the following relationship:

$$S_R = \sqrt{a^2 + H^2}$$

where S_R is a reference distance, a is the turning reference, and H is a wheel base dimension of the vehicle.

16. The system of claim 10 wherein the logic for determining a velocity for each wheel drive based on the vehicle velocity, wheel drive distance, and reference distance comprises logic for determining the velocity for each wheel drive based on the following relationship:

$$V = \frac{S}{S_R} \times V_R$$

where V is the velocity for the wheel drive, S is the wheel drive distance from the turning reference, S_R is the reference distance, and V_R is the vehicle velocity.

17. The method of claim 10 further comprising logic for determining a steering angle for at least one wheel drive.

18. The method of claim 17 further comprising logic for outputting the determined steering angle to the at least one drive.

19. A system for controlling a multi-wheel drive vehicle comprising the steps of:

(a) means for inputting at least one control signal;

(b) a controller means in circuit communication with the means for inputting a plurality of control signals;

(c) at least two wheel drive means in circuit communication with the controller means;

(d) means for determining a turning reference and a vehicle velocity from the input device;

(e) means for determining a reference distance from the turning reference;

(f) means for determining a wheel drive distance from the turning reference for each wheel drive of the multi-wheel drive vehicle;

(g) means for determining a velocity for each wheel drive based on the vehicle velocity, wheel drive distance, and reference distance; and

(h) means for outputting the determined velocity for each wheel drive to each wheel drive.

20. The system of claim 19 wherein the means for inputting at least one control signal comprises a user manipulable means.

21. The system of claim 20 wherein the user manipulable means comprises a joystick device.

22. The method of claim 19 wherein the means for inputting at one control signal comprises a steering servo-mechanism.

23. The system of claim 19 wherein the means for determining a turning reference and a vehicle velocity from the means for inputting comprises means for determining the turning reference based on the following relationship:

$$a = H_R \times \tan\beta$$

where a is the turning reference, H_R is the distance from an origin of the vehicle's coordinate system to a vehicle velocity reference point, and β is an angle associated with the vehicle's steering servo-mechanism.

24. The system of claim 19 wherein the means for determining a reference distance from the turning reference comprises means for determining the reference distance based on the following relationship:

$$S_R = \sqrt{a^2 + H^2}$$

where S_R is the reference distance, a is the turning reference, and H is a wheel base dimension of the vehicle.

25. The system of claim 19 wherein the means for determining a velocity for each wheel drive based on the vehicle velocity, wheel drive distance, and reference distance comprises means for determining the velocity for each wheel drive based on the following relationship:

$$V = \frac{S}{S_R} \times V_R$$

where V is the velocity for the wheel drive, S is the wheel drive distance from the turning reference, S_R is the reference distance, and V_R is the vehicle velocity.

26. The method of claim 19 further comprising the logic for determining a steering angle for at least one wheel drive.

27. The method of claim 19 further comprising logic for outputting the determined steering angle to the at least one drive.

28. A method of driving a multiple wheel drive vehicle comprising the steps of:

(a) reading an angle value associated with a steering position;

(b) determining a velocity for at least one wheel drive based on the angle value, a vehicle reference point's velocity and location from a predetermined origin, and at least one wheel drive base dimension; and

(c) outputting the determined velocity to the at least one wheel drive.

29. A system for driving a multi-wheel drive vehicle comprising:

(a) means for inputting at least one control signal;

(b) a controller means in circuit communication with the means for inputting a plurality of control signals;

(c) at least one wheel drive means in circuit communication with the controller means;

(d) means for determining a velocity for the at least one wheel drive means based on the at least one control signal, a vehicle reference point's velocity and location from a predetermined origin, and at least one wheel drive base dimension; and

(e) output means conveying the determined velocity to the at least one wheel drive.